

MMBT4401W

Rev.F Dec.-2021

描述 / Descriptions

SOT-323 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a SOT-323 Plastic Package.

特征 / Features

ESD 值：人体 4KV，机器，400V。无卤产品。

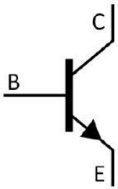
ESD Rating: Human Body Model; 4 kV, Machine Model; 400 V. HF Product.

用途 / Applications

用于 I_c 电流达 500mA 的中功率放大及开关电路。

Medium power amplifier and switch requiring collector currents up to 500 mA.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1 : Emitter

PIN 2 : Base

PIN 3 : Collector

印章代码 / Marking

Marking	H2X
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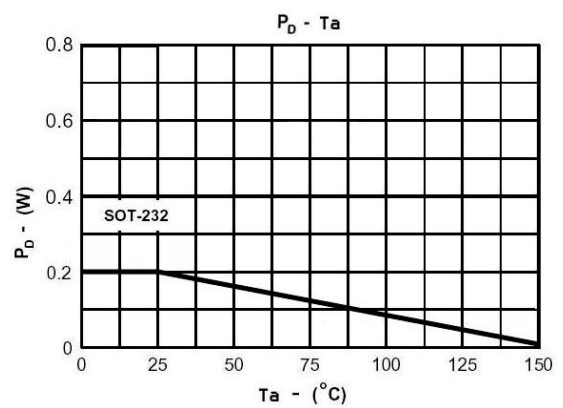
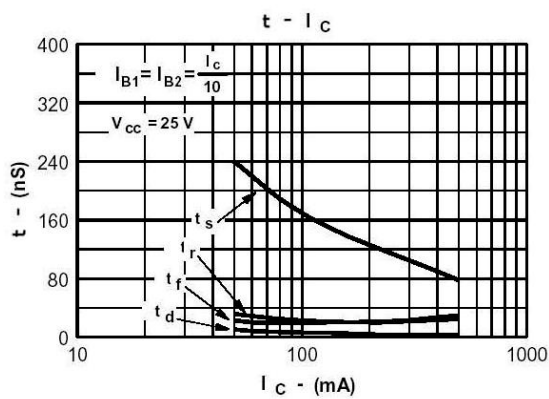
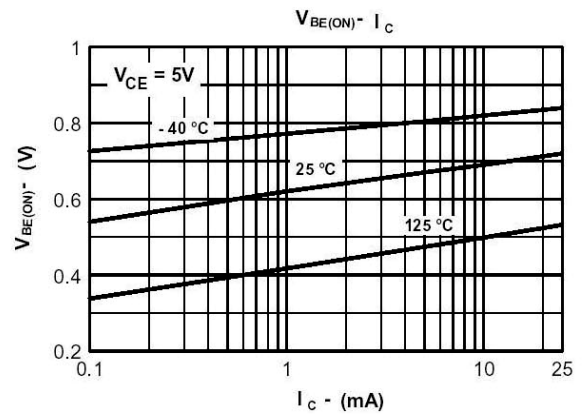
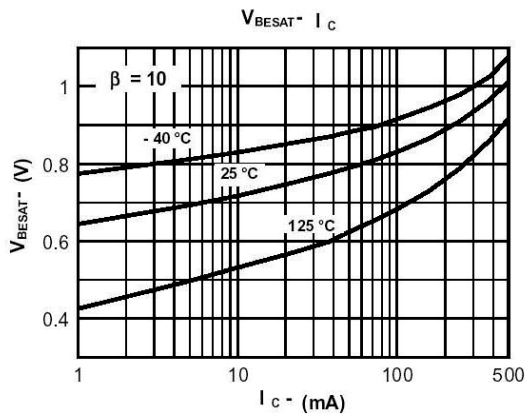
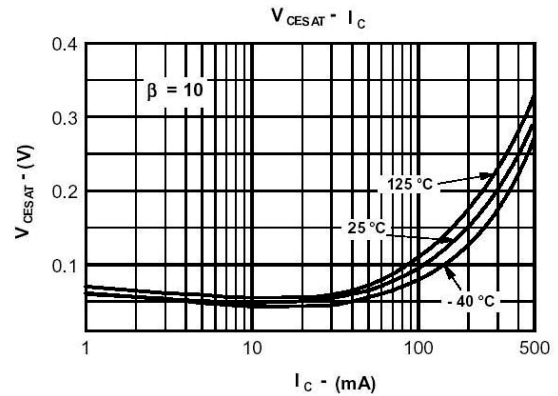
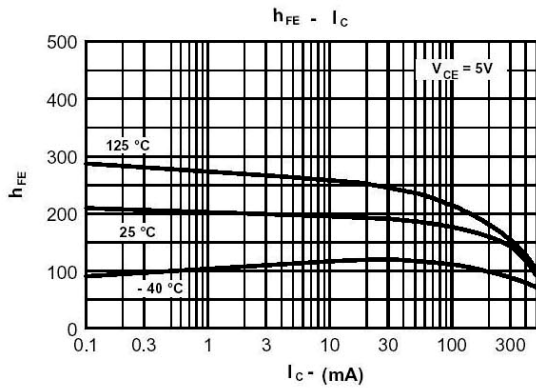
极限参数 / Absolute Maximum Ratings(Ta=25°C)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	40	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current - Continuous	I_C	600	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55 ~ 150	°C

电性能参数 / Electrical Characteristics(Ta=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Emitter Breakdown Voltage	V_{CEO}	$I_C=1.0mA$ $I_B=0$	40			V
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=0.1mA$ $I_E=0$	60			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=0.1mA$ $I_C=0$	6.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=60V$ $I_E=0$			50	nA
Emitter to Base Current	I_{EBO}	$V_{EB}=6.0V$ $I_C=0$			50	nA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=1.0V$ $I_C=150mA$	100		300	
	$h_{FE(2)}$	$V_{CE}=2.0V$ $I_C=500mA$	40			
	$h_{FE(3)}$	$V_{CE}=1.0V$ $I_C=10mA$	80			
	$h_{FE(4)}$	$V_{CE}=1.0V$ $I_C=1.0mA$	40			
	$h_{FE(5)}$	$V_{CE}=1.0V$ $I_C=0.1mA$	20			
Collector to Emitter Saturation Voltage	$V_{CE(sat)(1)}$	$I_C=150mA$ $I_B=15mA$			0.4	V
	$V_{CE(sat)(2)}$	$I_C=500mA$ $I_B=50mA$			0.75	V
Base to Emitter Saturation Voltage	$V_{BE(sat)(1)}$	$I_C=150mA$ $I_B=15mA$	0.75		0.95	V
	$V_{BE(sat)(2)}$	$I_C=500mA$ $I_B=50mA$			1.2	V
Transition Frequency	f_T	$V_{CE}=10V$ $I_C=20mA$ $f=100MHz$	250			MHz
Delay Time	t_d	$V_{CC}=30V$ $I_C=150mA$			15	ns
Rise Time	t_r	$I_{B1}=15mA$			20	ns
Storage Time	t_s	$V_{CC}=30V$ $I_C=150mA$			225	ns
Fall Time	t_f	$I_{B1}=-I_{B2}=15mA$			30	ns

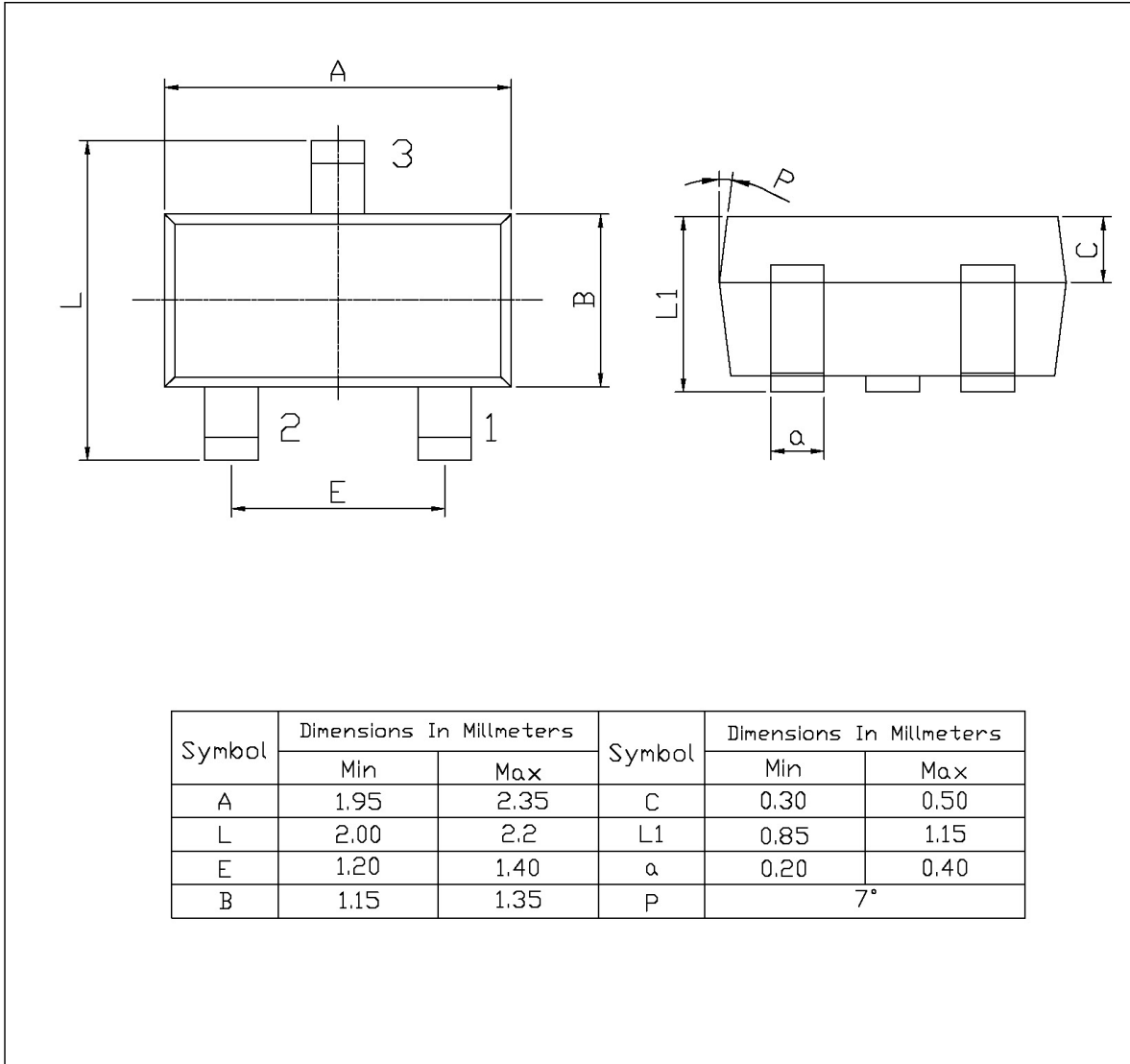
电参数曲线图 / Electrical Characteristic Curve



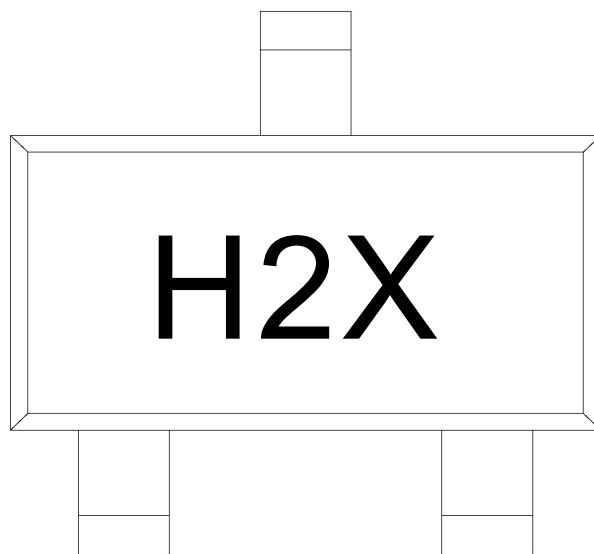
外形尺寸图 / Package Dimensions

SOT-323

单位: mm



印章说明 / Marking Instructions



说明：

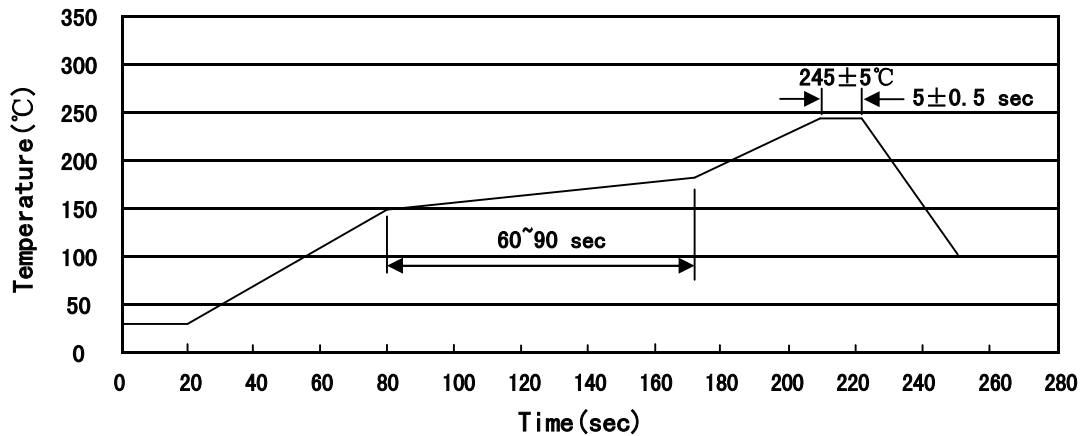
H： 为公司代码

2X： 为型号代码

Note:

H: Company Code.

2X: Product Type.

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)


说明：

- 1、预热温度 150~180°C，时间 60~90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

- 1.Preheating:150~180°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
SOT-323	3,000	10	30,000	6	180,000	7" ×8	180×120×180	390×385×205

使用说明 / Notices